

L22 ANSWER 1 OF 1 CA COPYRIGHT 2004 ACS on STN

AN 129:291698 CA

TI Manufacture of mixed gases containing carbon monoxide and hydrogen

IN Okamoto, Atsushi; Nakamura, Kenji; Yomeoka, Mikio; Ebata, Shuji; Ikoma, Futoshi

PA Mitsubishi Gas Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10259001	A2	19980929	JP 1997-63146	19970317
PRAI	JP 1997-63146		19970317		

AB Mixed gases containing CO and H are manufactured by decomposition of liquid-phase MeOH in

the presence of Cu- and Cr-containing solid **catalysts**. The **catalyst** may contain Mn compds. and/or alkaline earth compds. Alkali **metal** compds. may be contained in the **catalysts** and/or the reaction solns. Me **formate** may be contained in MeOH.

L24 ANSWER 1 OF 8 USPATFULL on STN
AN 2002:280689 USPATFULL
TI Promoted skeletal iron **catalysts** for Fischer-Tropsch synthesis processes
IN Zhou, Peizheng, Lawrenceville, NJ, UNITED STATES
Lu, Yijun, Lawrenceville, NJ, UNITED STATES
PA Hydrocarbon Technologies, Inc. (U.S. corporation)
PI US 2002156137 A1 20021024
AI US 2002-107915 A1 20020327 (10)
RLI Continuation-in-part of Ser. No. US 2001-895621, filed on 2 Jul 2001, PENDING Continuation of Ser. No. US 1999-399852, filed on 21 Sep 1999, GRANTED, Pat. No. US 6277895
DT Utility
FS APPLICATION
LREP Hydrocarbon Technologies, Inc., 1501 New York Avenue, Lawrenceville, NJ, 08648
CLMN Number of Claims: 19
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 547
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Promoted skeletal iron **catalysts** are provided which contain 70-90 wt % iron together with promoters 0-5.0 weight % copper, 0.1-10.0 weight % manganese, and 0.1-3.0 weight % potassium, with the balance being aluminum. The **catalysts** are prepared by mixing the **metal** chips or powders **uniformly** together, then melting and rapidly quenching the molten **metals** to **form** a solid **metal** alloy precursor including the promotor **metals** except potassium, removing most of the aluminum by caustic extraction/leaching to provide a base skeletal iron **form**, then loading the potassium promoter from a suitable potassium alcohol solution promoter. After evaporation of the solvent, the promoted skeletal iron **catalyst** is activated by contact with hydrogen. The promoted skeletal iron **catalysts** are utilized for F-T synthesis processes at 10-30 wt % **catalyst** concentration, 200-350° C. temperature, 1.0-3.0 Mpa pressure and gas hourly space velocity of 0.5-5.0 L/gcat-h to produce desired hydrocarbon liquid products. The promoted skeletal iron **catalysts** provide good catalytic activity and selectivity for hydrogen and CO conversions, for distillate fuel products are attrition resistant synthesis, and are readily separable from waxy liquid product by gravity sedimentation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L24 ANSWER 2 OF 8 USPATFULL on STN
AN 2002:81655 USPATFULL
TI Production of 6-aminocaproic acid
IN Bunel, Emilio E., Wilmington, DE, United States
Koch, Theodore A., Wilmington, DE, United States
Ozer, Ronnie, Arden, DE, United States
Sengupta, Sourav K., Wilmington, DE, United States
PA E.I. du Pont de Nemours and Company, Wilmington, DE, United States (U.S. corporation)
PI US 6372939 B1 20020416
AI US 2000-713143 20001116 (9)
DT Utility
FS GRANTED
EXNAM Primary Examiner: Wilson, James O.; Assistant Examiner: Tucker, Zachary
LREP Deitch, Gerald E.
CLMN Number of Claims: 20
ECL Exemplary Claim: 1

DRWN 0 Drawing Figure(s); 0 Drawing Page(s)

LN.CNT 578

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A process for making 6-aminocaproic acid by **hydroformylating** 3-pentenitrile to produce 3-, 4-, and 5-**formylvaleronitrile** (FVN mixture), oxidizing the FVN mixture to produce 3-, 4-, and 5-cyanovaleric acid; hydrogenating the resulting product to produce 6-aminocaproic acid, 5-amino-4-methylvaleric acid, and 4-amino-3-ethylbutyric acid; and isolating 6-aminocaproic acid from the reaction product. The resulting 6-aminocaproic acid can be cyclized to produce caprolactam.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L24 ANSWER 3 OF 8 CA COPYRIGHT 2004 ACS on STN

AN 139:247721 CA

TI Promoting Effects of Some **Metal** Additives on the Methanol Synthesis Activity of Sulfided Pd/SiO₂ **Catalyst** from Syngas Containing H₂S

AU Koizumi, Naoto; Murai, Kazuhito; Tamayama, Seiko; Ozaki, Toshihiko; Yamada, Muneyoshi

CS Department of Applied Chemistry, Graduate School of Engineering, Tohoku University, Sendai, 980-8579, Japan

SO Energy & Fuels (2003), 17(4), 829-835

CODEN: ENFUEM; ISSN: 0887-0624

PB American Chemical Society

DT Journal

LA English

AB A sulfided Pd/SiO₂ **catalyst** was doped with various kinds of **metal** additives (M: Li, K, Cs, Mg, Ca, Sr, Ba, Sc, Y, La, Nd, Mn, Zn, or Al) and used for methanol synthesis from CO hydrogenation. The addition of Ca, Y, La, or Nd significantly improved the activity for methanol synthesis, and among these additives, Ca was the most effective additive. Besides, the methanol synthesis activity of the sulfided Pd/SiO₂ doped with the Ca additive changed, depending on the preparation method of the precursor. The calcination of the precursor after impregnating with the Pd-containing solution was helpful for improving the methanol synthesis activity.

The most active **catalyst** doped with the Ca additive yielded 720 g kg-cat⁻¹ h⁻¹ of methanol at 593 °K and 5.1 MPa, which was approx.50% of the space-time yield of methanol that is obtained with a com. Cu/Zn/Al **catalyst** at 593 °K and 5.1 MPa from a syngas containing CO₂. Besides, even in the presence of H₂S, the sulfided Pd/SiO₂ **catalyst** doped with the Ca additive preserved 35% of the initial activity. The undoped **catalyst** showed a much lower methanol synthesis activity than the doped **catalyst** in the presence of H₂S as well. Thus, even in the presence of a small amount of H₂S in syngas, the Ca additive shows the promoting effect on increasing the methanol synthesis activity. In contrast with the sulfided **catalysts**, in the presence of H₂S, the methanol synthesis activity of the Cu/Zn/Al **catalyst** decreased linearly with time onstream and eventually dropped to zero.

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 4 OF 8 CA COPYRIGHT 2004 ACS on STN

AN 121:258370 CA

TI Catalytic hydrogenation of carbon dioxide and characterization of REY-supported bimetal **catalysts**

AU Yin, Xiaolong; Ji, Yuanyuan; Yin, Lihua; Wang, Changyou; Li, Xianglan; Li, Aixin

CS Dep. Appl. Chem., Taiyuan Univ. Technol., Taiyuan, 030024, Peop. Rep. China

SO Huanjing Kexue (1993), 14(5), 19-23

CODEN: HCKHDV; ISSN: 0250-3301

DT Journal

LA Chinese

AB The REY and ZSM-5 zeolite-supported bimetal **catalysts** for hydrogenation of carbon dioxide were evaluated by autoclave expts. The catalytic properties of the **catalysts** were tested and the activities decreased in the following order: for carbon dioxide methanation: Ru/REY > NiRu/REY > NiPd/REY > NiIr/REY; for synthesis of alcs.: NiCu/REY > Ni/REY > NiMn/REY > NiCo/REY. The conversion of carbon dioxide to methane is $\leq 76\%$ over the 2% Ru/REY **catalyst** at 473 K, 3.9 MPa, ratio of hydrogen gas/carbon dioxide is 5, in a 20 h run. The influence of reaction conditions on the NiCu/REY indicated that the selectivity for alcs. is high at 443-473 K. The increase of reaction temperature and pressure lowered the selectivity for alcs. and increased the selectivity for methane and carbon monoxide. The polar solvents such as triethylamine promoted the carbon dioxide hydrogenation more effectively than less polar solvents. FT-IR spectra indicated that the intensity of the 1400 and 1437 cm^{-1} bands of the REY-supported **catalysts** are higher than that of ZSM-5-supported **catalysts**. The peaks at 1400, 1437 and 1636 cm^{-1} might be assigned to the absorption of NH_3 coordinated to the **metal** ion center in the **form** of $[\text{Ni}(\text{NH}_3)_6]^{2+}$ and/or $[\text{Ni}(\text{NH}_3)_5\text{NO}_3]^+$.

L24 ANSWER 5 OF 8 CA COPYRIGHT 2004 ACS on STN

AN 121:178847 CA

TI Quantum chemistry study on the mechanism of CO activation over Cu-based **catalysts** for methanol synthesis

AU Lai, Wujiang

CS Dep. Chem., Xiamen Univ., Xiamen, 361005, Peop. Rep. China

SO Huaxue Wuli Xuebao (1993), 6(4), 306-13

CODEN: HWXUE4; ISSN: 1003-7713

DT Journal

LA Chinese

AB Based on the XPS, ESR and TPD-MS spectroscopies investigations into CO adsorption on Cu-based **catalysts** MnO-Cu/SiO_2 , both the Cu_5 cluster model and the Cu_4MnO cluster model for the CO adsorbed on the active center of **catalysts** have been proposed. The nature of CO activation on this **catalysts** for methanol synthesis has been studied with the DV- $X\alpha$ quantum chemical calcns. The calcns. of the total energy of adsorption system show that the CO mol. is linearly bonded to the Cu atom in which the CO is tilted with its O atom toward the Mn atom, **forming** an angle of 45° with normal of the Cu-Mn bond. The activation of CO on Cu_4MnO cluster is caused through 0.58 electrons transfer from the σ MOs of CO to the Cu and Mn atoms and back-donation of 0.66 electrons from the Cu and Mn to the lowest unfilled CO $2\pi^*$ orbital. The relevant mechanism is also obtained for CO adsorption on the Cu_5 cluster like Fig.1, but the π -back-donation of charge is smaller than CO on Cu_4MnO cluster. Moreover, the σ and π overlap populations between the C and O atoms of adsorbed CO on the Cu_5 cluster are weaker than that on the Cu_4MnO cluster. The calcns. also show that the occupied $2\pi^*$ orbital of the CO- Cu_4MnO cluster is primarily **formed** by the mixing of CO $2\pi^*$ orbital with $\text{Cu}3d$ and $\text{Mn}3d$ orbitals, the main atomic components are Cu 1.21%, Mn: 79.21%, C: 2.46% and O: 9.81%, i.e., the $2\pi^*$ orbital of adsorbed CO has some electrons. The above results indicate that the effects of promoter MnO on CO activation improve the ability of **metal** atoms to back donation of electrons into $2\pi^*$ orbital of adsorbed CO mol.

L24 ANSWER 6 OF 8 CA COPYRIGHT 2004 ACS on STN

AN 108:97169 CA

TI **Catalysts** for steam **reforming** of methanol

IN Mizuno, Koichi; Watanabe, Akira; Takeuchi, Yoshimitsu; Wakijima, Naohisa

PA Agency of Industrial Sciences and Technology, Japan; Kyushu Refractories Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 5

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62250948	A2	19871031	JP 1986-96454	19860424
	JP 05082321	B4	19931118		
PRAI	JP 1986-96454		19860424		

AB The title **catalysts** for manufacturing H, CO, and CO₂ from MeOH and H₂O, are composed of heat-resistant porous inorg. compds. selected from Al₂O₃, SiO₂, SiO₂-Al₂O₃, cordierite, and/or zeolite, ≥ 1 **metal** selected from base **metals**, e.g. Ni, Co, Fe, Mn, Mo, Cr, etc. or noble **metals**, e.g., Pd, Pt, Rh, etc. and ≥ 1 **metal** selected from alkali and alkaline earth **metals**, e.g., Na, K, Mg, Ca, etc. Thus, an aqueous solution containing Ni(NO₃)₂·6H₂O and KNO₃ was mixed with Al₂O₃, dried, and baked at 500° to give a **catalyst**, which was packed in a reactor and activated by MeOH at 250°. Then, 1.0:1.0 mol ratio mixture of H₂O and MeOH was passed through the reactor at 350° to give a mixture containing H 70.5, CO 4.7, CO₂ 20.5, and others 4.3 mol% at 98.4% MeOH conversion, vs., 7.3, 2.3, 2.4, 88.0, and 94.0, resp., using a similar **catalyst** without K.

L24 ANSWER 7 OF 8 CA COPYRIGHT 2004 ACS on STN

AN 104:9959 CA

TI **Catalysts** for methanol decomposition - effect of potassium nitrate addition

AU Zhou, Zexing; Mizuno, Koichi; Suzuki, Masatomi

CS Inst. Environ. Chem., Acad. Sin., Beijing, Peop. Rep. China

SO Huanjing Huaxue (1985), 4(4), 28-32

CODEN: HUHADB; ISSN: 0254-6108

DT Journal

LA Chinese

AB H₂ and CO are the main reaction products (>95%) of MeOH [67-56-1] at 350° on a **catalyst** containing K, M, and Al₂O₃, or K, Rh, M, and Al₂O₃ (where M is a base **metal** other than K). When K was not contained in the **catalyst**, the main reaction product was H₂O. **Catalysts** containing K are therefore useful in the treatment of exhaust gas containing MeOH.

L24 ANSWER 8 OF 8 CA COPYRIGHT 2004 ACS on STN

AN 97:215288 CA

TI Conversion of methanol over **metal** ion exchanged forms of fluorotetrasilicic mica

AU Morikawa, Yutaka; Goto, Tadatoshii; Moro-Oka, Yoshihiko; Ikawa, Tsuneo

CS Res. Lab. Res. Util., Tokyo Inst. Technol., Yokohama, 227, Japan

SO Chemistry Letters (1982), (10), 1667-70

CODEN: CMLTAG; ISSN: 0366-7022

DT Journal

LA English

AB The catalytic activities of **metal** ion exchanged forms of fluorotetrasilicic mica (**metal**-TSM) were tested for the conversion of methanol. Although Na- and H-TSM have no activities, some **metal**-TSM's show characteristic activities. Ti-TSM exclusively catalyzes the dehydration reaction like an acid **catalyst**. Cu-TSM dehydrogenates MeOH to produce HCO₂Me selectively. The mechanism of the activity was discussed.

L30 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2
 AN 1989:156523 CAPLUS
 DN 110:156523
 TI Process for synthesis of esters from gaseous reactants containing organic
 hydroxy compounds and mixtures of hydrogen and carbon monoxide
 IN Attig, Thomas G.; Graham, Anne M.; Pesa, Frederick A.
 PA Standard Oil Co., USA
 SO U.S., 7 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4790963	A	19881213	US 1984-642406	19840820
PRAI	US 1984-642406		19840820		

AB The title process with high selectivity involves the reaction in the
 presence of a Ru-Cu-containing **catalyst** complex MaAbRuCuCzNzOx (M =
 Ce, Cr, Fe, Mn, or their mixts.; A = alkali, alkaline earth metal, or their
 mixts.; a = 0-1, b = 0.002-10, c = 0.2-20, z = 0-196, x = number of O).
 Thus, 3:7:0.5 mol CO-H-MeOH mixture was passed (3300 h⁻¹) through a reactor
 containing 5% Na0.3RuCuOx/95% Alundum at 350°, producing esters with
 16.6% selectivity.

=> d his

(FILE 'HOME' ENTERED AT 12:44:28 ON 16 MAR 2004)

FILE 'REGISTRY' ENTERED AT 12:45:07 ON 16 MAR 2004

L1	1 S METHANOL/CN
L2	1 S COPPER/CN
L3	1 S MANGANESE/CN
L4	1 S RHENIUM/CN
L5	1 S CARBON MONOXIDE/CN
L6	1 S HYDROGEN/CN

FILE 'CAPLUS, USPATFULL, CA' ENTERED AT 12:46:25 ON 16 MAR 2004

L7	8536 S L1 AND L2
L8	980 S L7 AND L3
L9	215 S L8 AND L5
L10	215 S L9 AND L9
L11	96 S L9 AND L6
L12	71 S L11 AND ?FORM?
L13	57 S L12 AND CATALYST
L14	30 S L13 AND METAL
L15	19 DUP REM L14 (11 DUPLICATES REMOVED)
L16	0 S L15 AND FORMIC ESTER
L17	4 S L15 AND ESTER
L18	15 S L15 NOT L17
L19	4 S L18 AND SYN? GAS
L20	11 S L14 NOT L15
L21	0 S L20 AND FORMIC ESTER
L22	1 S L20 AND FORMATE
L23	9 DUP REM L20 (2 DUPLICATES REMOVED)
L24	8 S L23 NOT L22
L25	87 S L8 AND L4
L26	64 S L25 AND CATALYST
L27	8 S L26 AND SYN? GAS
L28	7 S L27 NOT L15
L29	6 S L28 NOT L14
L30	2 DUP REM L29 (4 DUPLICATES REMOVED)